

09/417

#417/1652
FEB 01

PATENT

Attorney Docket No.: A-64789-3/RFT/RMS/RMK

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



In re Application of:

MEADE, T.

Serial No. 09/841,809

Filed: April 24, 2001

For: DETECTION OF ANALYTES
USING REORGANIZATION
ENERGY

Examiner: NOT YET ASSIGNED

Group Art Unit: NOT YET ASSIGNED

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INFORMATION DISCLOSURE STATEMENT AND
STATEMENT OF RELATEDNESS

Assistant Commissioner
for Patents
Washington, DC 20231

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Sir:

In satisfaction of the duty of disclosure under 37 C.F.R. § 1.56, and in accordance with the provisions of 37 C.F.R. §§ 1.97 and 1.98, Applicants wish to draw the attention of the U.S. Patent and Trademark Office to the reference cited on the accompanying form PTO-1449.

Since copies of documents 1-207 were provided either by the Applicant or the Examiner in the following related U.S. Applications; Serial No. 09/417,988, filed October 13, 1999; U.S.S.N. 09/096,504, filed June 12, 1998, now Patent Number 6,013,170; and U.S.S.N. 08/873,977, filed June 12, 1997, now Patent Number 6,013,459, upon which the instant application relies for its priority date, in accordance with 37 C.F.R. § 1.98(d), no copies of these references are enclosed. Copies of documents 205-229 are enclosed herewith.

Serial No.: 09/841,809
Filed: April 24, 2001

With respect to patent applications, the applicants point out their duty under M.P.E.P. §2001.06(b) to disclose relevant patent applications of which they are aware. To this end, the applicants draw the Examiner's attention to the following patent applications;

1. United States Serial Number 08/743,798, filed November 5, 1996; U.S.S.N. 08/873,978, filed June 12, 1997; U.S.S.N. 08/899,510, July 24, 1997; U.S.S.N. 08/911,085, filed August 14, 1997, now Patent Number 6,090,933; U.S.S.N. 09/557,577, filed April 21, 2000; and U.S.S.N. 09/577,429, filed May 22, 2000.
2. U.S.S.N. 08/873,977, filed June 12, 1997, now Patent Number 6,013,459; 09/096,504, filed June 12, 1998, now Patent Number 6,013,170;10; U.S.S.N. 09/417,988, filed October 13, 1999.
3. U.S.S.N. 08/166,036, filed December 10, 1993, now Patent Number 5,591,578; U.S.S.N. 08/475,051, filed June 7, 1995, now Patent Number 5,824,473; U.S.S.N. 08/660,534, filed June 7, 1995, now Patent Number 5,770,369; U.S.S.N. 08/659,987, filed June 7, 1996, now abandoned; U.S.S.N. 08/709,265, filed September 6, 1996, now Patent Number 5,705,348; U.S.S.N. 08/709,263, filed September 6, 1996, now Patent Number 5,780,235; U.S.S.N. 08/873,598, filed June 12, 1997, now Patent Number 5,952,172; U.S.S.N. 08/946,679, filed October 8, 1997, now Patent Number 6,087,100; U.S.S.N. 09/100,507, filed June 19, 1998, now Patent Number 6,071,699; U.S.S.N. 09/306,749, filed May 7, 1999; U.S.S.N. 09/306,737, filed May 7, 1999; U.S.S.N. 09/306,768, filed May 7, 1999; U.S.S.N. 09/454,498, filed December 6, 1999; U.S.S.N. 09/459,751, filed December 10, 1999; U.S.S.N. 09/459,191, filed December 10, 1999, now Patent Number 6,180,352;

Serial No.: 09/841,809
Filed: April 24, 2001

U.S.S.N. 09/454,497, filed December 6, 1999; U.S.S.N. 09/458,187, filed December 8, 1999;
U.S.S.N. 09/545,227, filed April 7, 2000; and U.S.S.N. 09/602,618, filed June 22, 2000.

4. U.S.S.N. 08/873,597, filed June 12, 1997; U.S.S.N. 08/911,589, filed August
14, 1997; and U.S.S.N. 09/660,374, filed September 12, 2000.

5. U.S.S.N. 09/096,593, filed June 12, 1998.

None of the foregoing references are believed to disclose the invention as claimed.
Nothing herein shall constitute an admission concerning the contents of any of the cited
references, nor shall the inclusion of a reference herein be considered an admission that the
reference constitutes prior art against the invention claimed in the above-identified application.
Submission of the present document shall not be construed as an admission that a search has
been made or that better art does not exist.

This Information Disclosure Statement is being filed within three months of the filing
date of a national application, within three months of the date of entry of a national stage, or
before the mailing date of a first Office Action on the merits. 37 C.F.R. § 1.97(b), and therefor
no fee is required. The Commissioner is authorized to charge any additional fees which may be
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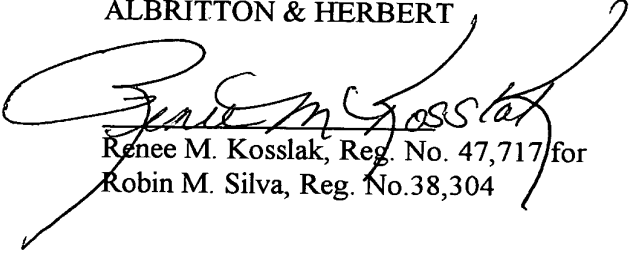
Serial No.: 09/841,809

Filed: April 24, 2001

Respectfully submitted,

FLEHR, HOHBACH, TEST,
ALBRITTON & HERBERT

Dated: 7/12/01


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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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1 of 13

Application Number 09/841,809
Filing Date April 24, 2001
First Named Inventor Meade, T.
Group Art Unit Not Yet Assigned
Examiner Name Not Yet Assigned
Attorney Docket Number A-64789-3/RFT/RMS/RMK

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U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
	1	4,707,352		Stavrianopoulos	11/1987	
	2	4,707,440		Stavrianopoulos	11/1987	
	3	4,711,955		Ward et al.	12/1987	
	4	4,755,458		Rabbani et al.	7/1988	
	5	4,840,893		Hill et al.	6/1989	
	6	4,849,513		Smith et al.	7/1989	
	7	4,868,103		Stavrianopoulos et al.	9/1989	
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	10	4,952,685		Stavrianopoulos	8/1990	
	11	4,994,373		Stavrianopoulos	2/1991	
	12	5,002,885		Stavrianopoulos	3/1991	
	13	5,013,831		Stavrianopoulos	5/1991	
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	15	5,175,269		Stavrianopoulos	12/1992	
	16	5,241,060		Englehardt et al.	8/1993	
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	18	5,312,527		Mikkelsen et al.	5/1994	

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		Office ³	Number ⁴	Kind Code ² (if known)				
	19	EP	0 234 938	A2	Cranfield Inst. of Tech.	2/1987		
	20	EP	0 229 943	B1	Molecular Biosystems Inc.	7/1987		
	21	EP	0 599 337	A2	Canon Kabushiki Kaisha	1/1994		
	22	EP	0 063 879	A2	Yale University	11/1982		
	23	EP	0 515 615		Boehringer Mannheim	9/1996		
	24	CA	2 090 904	A1	F. Hoffman-La Roche	9/1993		
	25	JP	238,166	A	Mitsubishi Corp.	1988	abstract	
	26	JP	6-41183	A2	Mitsubishi Corp.	1994		

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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PATENT & TRADEMARK

Complete if Known

Application Number	09/841,809
Filing Date	April 24, 2001
First Named Inventor	Meade, T.
Group Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	A-64789-3/RFT/RMS/RMK

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		Number	Kind Code ² (if known)			
	27	5,328,824		Ward et al.	7/1994	
	28	5,403,451		Riviello et al.	4/1995	
	29	5,449,767		Ward et al.	9/1995	
	30	5,472,881		Beebe et al.	12/1995	
	31	5,476,928		Ward et al.	12/1995	
	32	5,552,270		Khrapko et al.	9/1996	
	33	5,565,552		Magda et al.	10/1996	
	34	5,573,906		Bannwarth et al.	11/1996	
	35	5,591,578		Meade et al.	1/1997	
	36	5,595,908		Fawcett et al.	1/1997	
	37	5,601,982		Sargent et al.	2/1997	
	38	5,620,850		Bamdad et al.	4/1997	
	39	5,705,348		Meade et al.	1/1998	
	40	5,741,700		Ershov et al.	4/1998	
	41	5,756,050		Ershov et al.	5/1998	
	42	5,770,369		Meade et al.	6/1998	
	43	5,770,721		Ershov et al.	6/1998	
	44	5,776,672		Hashimoto et al.	7/1998	

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		Office ³	Number ⁴	Kind Code ² (if known)			
	45	WO	90/05732	A1	Columbia Univ.	5/1990	
	46	WO	92/10757	A1	Boehringer Mannheim	6/1992	
	47	WO	93/22678	A2	Mass. Inst. of Technology	11/1993	
	48	WO	93/10267	A1	IGEN, Inc.	5/1993	
	49	WO	94/22889	A1	Cis Bio International	10/1994	
	50	WO	95/15971	A2	Calif. Inst. of Technology	6/1995	
	51	WO	96/40712	A1	Calif. Inst. of Technology	12/1996	

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Application Number	09/841,809
Filing Date	April 24, 2001
First Named Inventor	Meade, T.
Group Art Unit	Not Yet Assigned
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	52	5,780,234		Meade et al.	7/1998	
	53	5,824,473		Meade et al.	10/1998	
	54	5,851,772		Mirzabekov et al.	12/1998	
	55	5,952,172		Meade et al.	9/1999	
	56	5,443,701		Willner et al.	08/1985	
	57	5,795,453		Gilmartin et al.	08/1998	
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FOREIGN PATENT DOCUMENTS

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		Office ³	Number ⁴	Kind Code ² (if known)				
	59	WO	97/01646	A2	Univ. of N. Carolina	1/1997		
	60	WO	97/44651	A1	AU Membrane and	11/1997		
	61	WO	97/27329	A1	Univ. of Chicago	7/1997		
	62	WO	98/20162	A2	Clinical Micro Systems	5/1998		
	63	WO	98/27229	A1	Univ. of Chicago	6/1998		
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	65	WO	98/35232	A2	Univ. of N. Carolina	8/1998		
	66	WO	99/67425	A2	Clinical Micro Systems	12/1999		
	67	WO	99/14596	A1	AB Sangtec Medical	3/1999		
	68	EP	0 339 821			11/1989		
	69	EP	0 142 301			05/1985		
	70	WO	97/27473			07/1997		
	71	WO	93/25898			12/1993		

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Sheet 4 of 13

Application Number	09/841,809
Filing Date	April 24, 2001
First Named Inventor	Meade, T.
Group Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	A-64789-3/RFT/RMS/RMK

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	72	Aizawa et al., "Integrated Molecular Systems for Biosensors," <i>Sensors and Actuators B</i> , B@\$(Nos 1/3) Part 1:1-5 (March 1995).	
	73	Albers et al., "Design of Novel Molecular Wires for Realizing Long-Distance Electron Transfer," <i>Biochemistry and Bioenergetics</i> , 42:25-33 (1997).	
	74	Alleman, K.S., et al., "Electrochemical Rectification at a Monolayer-Modified Electrode," <i>J. Phys. Chem.</i> , 100:17050-17058 (1996).	
	75	Arkin et al. "Evidence for Photoelectron Transfer Through DNA Intercalation," <i>J. Inorganic Biochem. Abstracts</i> , 6th International Conference on Bioinorganic Chemistry, 51(1) & (2):526 (1993).	
	76	Barisci et al., "Conducting Polymer Sensors," <i>TRIP</i> , 4(9):307-311 (1996).	
	77	Baum, R. M., "Views on Biological, Long-Range Electron Transfer Stir Debate," <i>C&EN</i> , pp 20-23 (1993).	
	78	Bechtold, R., et al., "Ruthenium-Modified Horse Heart Cytochrome c: Effect of pH and Ligation on the Rate of Intramolecular Electron Transfer between Ruthenium(II) and Heme(III)," <i>J. Phys. Chem.</i> , 90(16):3800-3804 (1986).	
	79	Bidan, "Electroconducting conjugated polymers: new sensitive matrices to build up chemical or electrochemical sensors. A Review," <i>Sensors and Actuators</i> , B6:45-56 (1992).	
	80	Biotechnology and Genetics: Genetic Screening Integrated Circuit," <i>The Economist</i> (February 25-March 3, 1995).	
	81	Blonder et al., "Three-dimensional Redox-Active layered Composites of Au-Au, Ag-Ag and Au-Ag Colloids," <i>Chem. Commun.</i> 1393-1394 (1998).	
	82	Boguslavsky, L. et al., "Applications of redox polymers in biosensors," <i>Solid State Ionics</i> , 60:189-197 (1993).	
	83	Bowler, B. E., et al., "Long-Range Electron Transfer in Donor (Spacer) Acceptor Molecules and Proteins," <i>Progress in Inorganic Chemistry: Bioinorganic Chemistry</i> , 38:259-322 (1990).	
	84	Brun, A. M., et al., "Photochemistry of Intercalated Quaternary Diazaaromatic Salts," <i>J. Am. Chem. Soc.</i> , 113:8153-8159 (1991).	
	85	Bumm, et al., "Are Single Molecular Wires Conducting?," <i>Science</i> 271:1705-1707 (1996).	
	86	Cantor, C.R. et al., "Report on the Sequencing by Hybridization Workshop," <i>Genomics</i> , 13:1378-1383 (1992).	
	87	Carr et al., "Novel Electrochemical Sensors for Neutral Molecules," <i>Chem. Commun.</i> , 1649-1650 (1997).	
	88	Carter et al., "Voltammetric Studies of the Interaction of Metal Chelates with DNA. 2. Tris-Chelated Complexes of Cobalt(III) and Iron(II) with 10-Phenanthroline and 2,2'-Bipyridine," <i>J. Am. Chem. Soc.</i> , 111:8901-8911 (1989).	

Examiner Signature	Date Considered
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Sheet 5 of 13

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

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	89	Chang, I-Jy, et al., "High-Driving-Force Electron Transfer in Metalloproteins: Intramolecular Oxidation of Ferrocycytochrome c by Ru(2,2'-bpy) ₂ (im)(His-33) ³⁺ ," <i>J. Am. Chem. Soc.</i> , 113:7056-7057 (1991).	
	90	Chidsey, et al., "Coadsorption of Ferrocene-Terminated and Unsubstituted Alkanethiols on Gold" Electroactive Self-Assembled Monolayers," <i>J. Am. Chem. Soc.</i> , 112:4301-4306 (1990).	
	91	Chidsey, C.E.D., et al., "Free Energy and Temperature Dependence of Electron Transfer at the Metal Electrolyte Interface," <i>Science</i> , 251:919-922 (1991).	
	92	Chrisey, et al., "Covalent attachment of synthetic DNA to self-assembled monolayer films," <i>Nucleic Acids Research</i> , 24(15):3031-3039 (1996).	
	93	Clery, "DNA Goes Electric," <i>Science</i> , 267:1270 (1995).	
	94	<i>Commerce Business Daily Issue</i> of September 26, 1996 PSA#1688.	
	95	Davis, L. M., et al., "Electron Donor Properties of the Antitumour Drug Amsacrine as Studied by Fluorescence Quenching of DNA-Bound	
	96	Davis, L. M., et al., "Elements of biosensor construction," <i>Enzyme Microb. Technol.</i> 17:1030-1035 (1995).	
	97	Degani et al., "Direct Electrical Communication between Chemically Modified Enzymes and Metal Electrodes. 2. Methods for Bonding Electron-Transfer Relays to Glucose Oxidase and D-Amino-Acid Oxidase," <i>J. Am. Chem. Soc.</i> 110:2615-2620 (1988).	
	98	Degani, Y., et al., "Electrical Communication between Redox Centers of Glucose Oxidase and Electrodes via Electrostatically and Covalently Bound Redox Polymers," <i>J. Am. Chem. Soc.</i> , 111:2357-2358 (1989).	
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Application Number		09/841,809	
Filing Date		April 24, 2001	
First Named Inventor		Meade, T.	
Group Art Unit		Not Yet Assigned	
Examiner Name		Not Yet Assigned	
Attorney Docket Number		A-64789-3/RFT/RMS/RMK	

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	105	Durham, B., et al., "Photoinduced Electron-Transfer Kinetics of Singly Labeled Ruthenium Bis(bipyridin) Dicarboxybipyridine Cytochrome <i>c</i> Derivatives," <i>Biochemistry</i> , 28:8659-8665 (1989).	
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First Named Inventor	Meade, T.
Group Art Unit	Not Yet Assigned
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		First Named Inventor	Meade, T.
		Group Art Unit	Not Yet Assigned
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		Attorney Docket Number	A-64789-3/RFT/RMS/RMK
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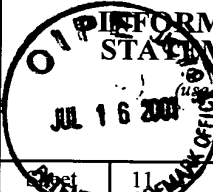
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 <p>INFORMATION DISCLOSURE STATEMENT BY APPLICANT (attach as many sheets as necessary)</p>		Application Number	09/841,809
		Filing Date	April 24, 2001
		First Named Inventor	Meade, T.
		Group Art Unit	Not Yet Assigned
		Examiner Name	Not Yet Assigned
		Attorney Docket Number	A-64789-3/RFT/RMS/RMK
Page 11 of 13			

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	186	Turro, N., et al. "Photoelectron Transfer Between Molecules Adsorbed in Restricted Spaces," <i>Photochem. Convers. Storage Sol. Energy, Proc. Int. Conf., 8th</i> , pp 121-139 (1990).	
	187	Uosake, K., et al., "A Self-Assembled Monolayer of Ferrocenylalkane Thiols on Gold as an Electron Mediator for the Reduction of Fe(III)-EDTA in Solution," <i>Electrochimica Acta.</i> , 36(11/12):1799-1801 (1991).	
	188	Van Ness, J., et al., "A Versatile Solid Support System for Oligodeoxynucleotide Probe-Based Hybridization Assays," <i>Nucleic Acids Research</i> , 19(12):3345-3350 (1991).	
	189	Velev et al., "In Situ Assembly of Colloidal Particles into Miniaturized Biosensors," <i>The ACS Journal of Surfaces and Colloids, Langmuir</i> , 15(11):3693-3698 (1999).	
	190	Watson et al., "Hybrid Nanoparticles with Block Copolymer Shell Structures," <i>J. Am. Chem. Soc.</i> , 121:462-463 (1999).	
	191	Weber, et al., "Voltammetry of Redox-Active Groups Irreversibly Adsorbed onto Electrodes. Treatment Using the Marcus Relation between Rate and Overpotential," <i>Anal. Chem.</i> , 66:3164-3172 (1994).	
	192	Williams, et al., "Studies of oligonucleotide interactions by hybridisation to arrays: the influence of dangling ends on duplex yield," <i>Nucleic Acids Research</i> , 22(8):1365-1367 (1994).	
	193	Winkler, J. R., et al., "Electron Transfer in Ruthenium-Modified Proteins," <i>Chem. Rev.</i> , 92:369-379 (1992).	
	194	Xu, et al., "Immobilization and Hybridization of DNA on an Aluminum(III) Alkanebisphosphonate Thin Film with Electrogenerated Chemiluminescent Detection," <i>J. Am. Chem. Soc.</i> , 117:2627-2631 (1995).	
	195	Xu, et al., "Immobilization of DNA on an Aluminum(III) alkanebisphosphonate Thin Film with Electrogenerated Chemiluminescent Detection," <i>J. Am. Chem. Soc.</i> , 116:8386-8387 (1994).	
	196	Yang, et al., "Growth and Characterization of Metal(II) Alkanebisphosphonate Multilayer Thin Films on Gold Surfaces," <i>J. Am. Chem. Soc.</i> , 115:11855-11862 (1993).	
	197	Yershov, G. et al., "DNA Analysis and Diagnostics on Oligonucleotide Microchips," <i>Proc. Natl. Acad. Sci. USA</i> , 93:4913-4918 (1996).	
	198	Zhou, et al., "Fluorescent Chemosensors Based on Energy Migration in Conjugated Polymers: The Molecular Wire Approach to Increased Sensitivity," <i>J. Am. Chem. Soc.</i> , 117:12593-12602 (1995).	

Examiner Signature	Date Considered
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Application Number	09/841,809
Filing Date	April 24, 2001
First Named Inventor	Meade, T.
Group Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	A-64789-3/RFT/RMS/RMK

Sheet	of	13
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Application Number				09/841,809	
Filing Date				April 24, 2001	
First Named Inventor				Meade, T.	
Group Art Unit				Not Yet Assigned	
Examiner Name				Not Yet Assigned	
Attorney Docket Number				A-64789-3/RFT/RMS/RMK	

U.S. PATENT DOCUMENTS						
Examine r Initials*	Cite No. ¹	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
	208	4,945,045		Forrest et al.	07/1990	
	209	5,089,112		Skotheim et al.	02/1992	
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	211	5,356,786		Heller et al.	10/1994	
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	213	5,436,161		Bergstrom et al.	07/1995	
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	215	5,824,473		Meade et al.	10/1998	
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	224	6,200,761		Meade et al.	03/2001	
	225	6,238,870		Meade et al.	05/2001	

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